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Identify Obstacles in Implementing Total Quality Management Framework in the Ghanaian Construction Sector using Exploring Factors Analysis Technique

Samuel Kwame Ansah [a*] and Emmanuel Tekpe [a]

[a] Department of Construction Technology and Management, Cape Coast Technical University, Box DL 50, Cape Coast, West Africa, Ghana.

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The concept of total quality management improves an organization's performance, but there are several obstacles to its practical application. This study therefore identifies the obstacles to implementing the Total Quality Management (TQM) framework in the Ghanaian construction sector. A survey questionnaire was employed for the study, and the results were based on responses from 536 of 641 questionnaires sent out to the top management in the Ghanaian construction sector. The sample frame for the study was determined from the population made up of one thousand two hundred and eighty-two (1282) small to large-sized (D4K4 to D1K1) good-standing construction firms registered with the Association of Building and Civil Engineering Contractors of Ghana (ABCECG). The data was analysed using the Exploratory Factor Analysis (EFA) technique.

**Corresponding author: Email: samuel.ansah@cctu.edu.gh;*

Cronbach's alpha was used to measure the reliability of the study instrument. While the Kaiser-Meyer-Olkin and Bartlett's tests of sphericity were employed to assess sampling adequacy and significance. The study identified sixteen obstacles in implementing TQM framework in the Ghanaian construction sector. The five most significant potential obstacles among the sixteen identified obstacles in the ranking were: lack of understanding of TQM; lack of enforcement by the agencies responsible for regulating the application of TQM; inadequate TQM systems; lack of enthusiasm for TQM implementation; and lack of a TQM policy. All sixteen items (obstacles) identified were found to have a high impact on TQM implementation in the Ghanaian construction sector. Hence, understanding these identified obstacles to TQM implementation will enable construction managers to develop more effective strategies for improving TQM implementation in the Ghanaian construction sector. The study contributes to existing literature by using exploratory factor analysis techniques to identify obstacles to total quality management implementation in the Ghanaian construction sector.

Keywords: Construction sector; obstacles; performance; total quality management.

1. INTRODUCTION

Construction organisations' failure to strictly adhere to the concepts of Total Quality Management (TQM) has resulted in low quality finished building projects [1]. The construction industry is often subject to criticism for its failure to adopt the quality-focused approach that has been effectively implemented in the manufacturing industry across several aspects of its operations. However, before drawing any parallels between the two industries, it is necessary to study the type of environment in which they function because, according to Yazdani [2] environmental uncertainty to some extent has influence on employees outcomes and performance. The manufacturing sector operates in a highly regulated environment where all factors that affect the quality of the products can be managed. The process of construction on site is not characterized by automation, in contrast to the production of engineered goods. In this context, the outcome of a construction project is primarily influenced by human factors, rather than the utilization of machines and technology. The process of construction is quite complicated and involves a wide range of parties and interests, including the owner, the architect, consultants, contractors, and vendors. The inherent characteristics of the construction industry seem to be a significant obstacle to achieving success in quality management [3]. Numerous scholarly investigations conducted within the construction sector have reached the consensus that the sector's performance is impeded by various factors, including its fragmented nature, inadequate coordination and communication among the parties involved, hostile contractual relationships, and a lack of emphasis on customer satisfaction [4]. The development of the quality management system should be tailored to the unique attributes of the project and its environment. Conventional quality management systems typically prioritize the implementation and oversight of control mechanisms, rather than emphasizing the outcomes that hold significance for consumers [5]. TQM has emerged as a prominent ideology that aids organizations in attaining optimal efficiency, competitiveness, and overall success within the marketplace. Although TQM has been proposed in theory to increase the performance of real applications, it is fraught with challenges. The existing literature highlights that the implementation of TQM is a multifaceted and challenging process that requires significant time and effort on the part of organizations. Numerous studies have been conducted to examine the various issues that impede the effective implementation of TQM across diverse areas and through different approaches [6]. Having a comprehensive understanding of these issues will empower managers within the construction sector to discern and apply effective strategies for overcoming the challenges encountered during the implementation of TQM system. The objective of this research study was to identify the obstacles that impact the successful implementation of Total Quality Management in the Ghanaian construction sector.

2. LITERATURE REVIEW

Several studies in the field of TQM aim to elucidate the underlying causes for the high prevalence of TQM failure, which is seen to be both extensive and increasing [7,8]. Additionally, these studies endeavour to delineate the various elements that are likely to hinder the successful

implementation of TQM [9,10;11,12,13]. In their study, Hamidi and Zamanparvar [8] identified challenges and obstacles associated with the implementation of Total Quality Management (TQM), specifically highlighting the absence of commitment from senior and middle management. The need of managerial commitment and the establishment of a suitable and supportive organizational culture were emphasized as crucial factors for achieving success. It has been noted that in both developed and developing nations, the absence of top management commitment has been highlighted as a significant factor contributing to failure reports in the implementation of TQM. According to Roberts [14], top management's support and dedication is crucial for TQM success. He explains that the true measure of top management commitment is the amount of resources (time, money, and people) that it is willing to devote to TQM implementation. Pheng and Teo [15] also argue that the level of support from management plays a crucial role in the successful implementation of TQM. The authors elucidated that the dedication of top management fosters a sense of alignment among employees, encouraging them to adhere to the prescribed directives and work practices. In their study, Hamidi and Zamanparvar [8] also discussed the implementation of training programmes aimed at enhancing the proficiency of managers and staff members in TQM procedures, with the ultimate goal of achieving efficient TQM implementation. The authors stressed that in order for TQM to achieve success, it is imperative for organisations to demonstrate a firm commitment towards providing training opportunities for employees across all hierarchical levels. Despite significant investments in quality awareness, statistical process control, and quality circles, training is frequently too narrowly oriented. Duran's admonition against training for specific organizational levels or product lines is frequently ignored [16]. The significance of this point is further emphasized by the scholarly work of Newall and Dale [17], who contends that inadequate education and training pose a significant barrier to the advancement and execution of a high-quality programme. Therefore, it is imperative to acknowledge the importance of comprehensive training in the application of Total Quality Management (TQM). This training should encompass several aspects such as technical proficiency, effective communication abilities, adeptness in small-team management, utilization of problem-solving tools, and proficiency in customer interactions.

According to Oakland [18], the absence of well-defined long-term objectives and targets might undermine the credibility of a quality implementation programme. Keys [19], on other hand, cautioned against the presence of an adversarial relationship between management and non-management personnel. The author placed significant emphasis on the indispensability of a collaborative partnership in achieving success in TQM. The successful implementation of TQM project necessitates the presence of employee trust, acceptance, and comprehension of management's objectives. Hence, it is imperative for management to acknowledge employees as crucial participants in the decision-making processes pertaining to quality enhancement, as their involvement can significantly contribute to the motivation and successful execution of quality programmes.

It is important to acknowledge that the lack of a comprehensive strategy for planning has frequently been a contributing factor to the ineffectiveness of quality improvement efforts. According to Duran [16], inadequacies in the initial planning might lead a process to function at a high degree of chronic waste. Duran [16] added that several managers were dissatisfied with their quality implementation agenda yet assigned quality planning low importance. In their study, Newall and Dale [17] noted that a considerable proportion of organisations exhibit a lack of capability or willingness to adequately strategize for the enhancement of quality. Hence, it is imperative for organisations using TQM to consistently emphasise to stakeholders the significance of spending money and time, towards the process of planning. If management took the time to plan projects well and invested in partnerships to build a good project team, a lot could be done in terms of product performance. This is because investments in prevention-oriented management can make a big difference in the quality of the products or services an organisation offers.

Due to the prevalent omission of quality considerations from corporate strategic planning, there is a notable lack of emphasis on allocating enough human and financial resources towards TQM. A significant focus is placed on enhancing the organization's profit margins, often at the expense of ensuring the desired quality of its offerings or supply to clients. The allocation of

funds towards employee training and development, which is crucial for the successful implementation of overall quality management, is insufficient. Employee training is frequently considered as an unnecessary investment that devalues profit margins, which are the major reason for a company's existence, and as a result, TQM has been overlooked because its implementation may not necessarily offer benefits to the organization in the short term. Most organizations' strategy plans are not customer-driven. They are often preoccupied with achieving profit-oriented goals within a specific time range.

The presence of a competitive market serves as a catalyst for numerous challenges pertaining to the attainment of high quality standards. One of the consequences of a competitive market is the potential for quality standards to be reduced to a level that is deemed minimally acceptable. The primary obstacle to achieving high quality is mostly a cognitive barrier stemming from a misunderstanding of the concept of quality. Regrettably, a significant number of organizations equate quality with high cost. The term provided implies the presumption that a company is unable to allocate resources for ensuring high quality. It is imperative to adopt a more comprehensive perspective in assessing quality, encompassing not only the company's product, but also all aspects of its operations. Quality is an inherent aspect of all organizational functions. When tasks are executed with substandard quality, it results in the organization incurring avoidable costs which are eventually transferred to the client. TQM should function by motivating employees at all levels to constantly improve their job, hence eliminating waste. When implemented appropriately, TQM can significantly cut operating expenses.

Excessive layers of management can result in duplication of duty and obligation. As a result, lower-level personnel in an organisation have relegated quality implementation to management. Furthermore, the shared responsibility for quality has not been assumed by both the management and the staff. Employees have been forced to play a secondary role in quality improvement due to the belief that management is infallible and thus always correct in its decisions. Consequently, there is a lack of motivation among employees who are directly engaged in the manufacturing of goods or delivery of services to address quality concerns voiced by their customers, as they do not perceive themselves as integral to the on-going process of enhancing quality.

2.1 Obstacles to the Implementation of Total Quality Management

Within the existing body of literature, numerous research have been conducted to explore various approaches aimed at identifying the factors that impede the effective implementation of TQM. Whalen and Rahim [9] have identified several factors that impede the successful implementation of TQM. These factors include inadequate planning, insufficient management commitment, labour force limitations, inadequate training, team complacency, utilisation of outdated software, resistance to organisational culture change, resource inadequacy, and insufficient quality measurement improvement. Sebastianelli and Tamimi [10] also identified several factors that impede the successful implementation of TQM. These factors include poor planning, inadequate practise management and human resource development, insufficient quality planning, absence of effective leadership in fostering a culture of quality, inadequate resources allocated to TQM, and a lack of customer orientation. In contrast, Johnson and Kleiner [11], identified several obstacles that hinder the effective implementation of TQM, including the absence of benchmarking practises, employee reluctance towards organisational change, and inadequate allocation of resources. In a study conducted by Mosadeghrad [12], various hurdles to the successful implementation of TQM were discovered. These obstacles included the presence of inefficient or inappropriate TQM models, the utilisation of ineffective or incorrect methods for TQM implementation, and the existence of an unsuitable environment for TQM implementation. The obstacles that impede the successful adoption of TQM have been categorised into five distinct groups, namely:

2.1.1 Strategic obstacles

Strategic obstacles pose substantial challenges for the implementation of TQM and exert the most pronounced negative influence on its overall success. The aforementioned challenges mostly pertain to management and leadership of the organization.

2.1.2 Structural obstacles

Structural impediments pertain to the organizational structure, procedures, and

physical resources required for the successful implementation of TQM.

2.1.3 Human resources obstacles

Human resources obstacles encompass challenges that pertain to human factors, including deficiencies in employee engagement and reluctance to change under the TQM framework.

2.1.4 Contextual obstacles

Contextual obstacles refer to the challenges that arise when there is an environment and culture that are conducive to achieving the maximum potential of implementing TQM.

2.1.5 Procedural obstacles

Procedural obstacles mostly arise from the intricate nature of the processes, insufficient attention to client needs, inadequate collaboration with suppliers, bureaucratic tendencies, and the absence of an evaluation and self-assessment framework.

The most prevalent obstacles to the successful deployment of a TQM system are strategic obstacles. Furthermore, obstacles related to human resources significantly influence the effectiveness of TQM implementation. It may be stated that, in both strategic and human resource-related obstacles, leadership is a critical factor in managing the change required to execute TQM.

2.2 Success Factors for TQM Implementation

In order to effectively execute TQM, it is imperative to ascertain the essential variables for success that are necessary for the implementation procedure. Saraph et al. [20] provided a definition for important success factors, which are identified as crucial domains of managerial planning and action that must be implemented in order to attain successful management of quality within a business unit. These factors may be conceptualized as constructs with latent variables that are not directly measurable but may still be indirectly appraised based on their observable manifestations [21]. In a pioneering study, Saraph et al. [20] devised a comprehensive quality management tool that established eight essential factors for the successful implementation of TQM. These factors include the involvement of top management within divisions, the role of the quality department, training initiatives, product and service design, supplier quality management, process/operations management, quality data and reporting, and fostering positive employee relations. The study conducted by the researchers exerted a significant impact on following investigations, leading to the emergence of diverse frameworks and constructs that were developed based on distinct perspectives and goals [22]. Despite variations in TQM methodologies, all of these frameworks or models highlight leadership, strategic planning, customer and market focus, human resources focus, process management, continuous improvement, supplier management, and business results to varying degrees [23,24,25,26]. The frameworks for TQM have identified two categories of important success factors: soft dimensions and hard dimensions [27,28,29,30]. The hard aspects of TQM primarily revolve around the implementation of tools, techniques, systems, and additional measures to effectively control and monitor work processes. These efforts aim to ensure adherence to performance standards and minimise variability. On the other hand, the soft aspects of TQM pertain to behavioural aspects, including enhancing customer orientation, managing employees, and fostering an organisational culture that promotes quality. The interdependence of these factors is crucial for the effective implementation of Total Quality Management (TQM).

Extensive research has been undertaken in the domain of TQM and its subsequent implementation. Sila and Ebrahimpour [31] conducted a comprehensive analysis of 347 articles on TQM published between 1989 and 2000. Their investigation revealed a total of seventy-six research papers that utilised factor analysis as a methodological approach to extract factors associated with the effective implementation of TQM. They then developed a list of twenty-five TQM constructs from these, which are now frequently utilised by researchers as a measurement tool for TQM implementation. Eight common cores of the elements were identified by their research, namely: customer focus and satisfaction, staff training, commitment from leadership and top management, teamwork, employee involvement, on-going innovation and improvement, and quality information and performance. The literature also indicates that other countries have implemented comparable

TQM elements as standards for quality awards, but under different titles [32]. Nevertheless, the criteria for these many quality awards are based on three fundamental frameworks: the Malcolm Baldrige National Quality Award (MBNQA), the European Quality Award (EQA), which is currently known as the European Foundation for Quality Management (EFQM) Excellence Award, and the Deming Prize.

3. METHODOLOGY

The study was carried out by using a structured questionnaire survey. Questionnaires designed for research purposes should include certain characteristics in order to ensure the quality and reliability of the data collected. These characteristics include being easy to respond, free from bias, brief, and unambiguous, as emphasised by previous studies [33;34]. Furthermore, in order to obtain a more dependable and facilitate analysis of the perception of the population regarding the obstacles that are likely to impede the implementation of TQM, a survey questionnaire was adopted. In this study, the preferred method for data collection was the administration of structured questionnaires in a face-to-face setting. The study's population consisted of construction firms in Ghana, ranging from Small to Large Sized (D4K4 to D1K1). Participants were asked to evaluate each item using a Five Point Likert scale, indicating their level of agreement or disagreement with the obstacles that are likely to impede the implementation of TQM in the construction industry. The establishment of the sample frame was accomplished by the acquisition of a comprehensive roster of construction firms that are duly registered and maintain a favourable status with the Association of Building and Civil Engineering Contractors of Ghana (ABCECG). Good standing construction firms which have registered with the ABCECG as at the time of data collection for this research, was recorded as 1,282. The study opted to select a sample size equivalent to 50% of the total population under investigation. The decision was made in accordance with the findings of Leedy and Ormrod [35], who argued that when the population size approximates 1500, it is recommended to sample at least 20% or more of the population. Hence, given that the whole population under investigation consisted of 1282 individuals, a sample size of 50% (641) was considered sufficient for the purposes of this study. The research employed a probability sampling method to ensure that all sectors of the construction firms, as previously described, were included in the sample. This approach aimed to pick a representative sample of firms for the study. Therefore, a methodology of simple random sampling was employed, ensuring that every individual within the population had an equal probability of being chosen [36]. The decision to employ this particular sample method was predicated upon a careful consideration of the characteristics and makeup of construction firms in Ghana. The rationale for selecting a representative sample for the study was also grounded on the recommendation put out by Smith [37], which stipulated that random sampling is essential for a study of this kind.

A total of 641 questionnaires were distributed to top-level individuals in the construction industry of Ghana. Of these, 536 questionnaires were successfully completed and collected for analysis, resulting in a response rate of 83.62 percent. The data that was gathered underwent coding and analysis using Statistical Package for Social Sciences (SPSS) version 20 in order to assess the Kaiser-Mayor Olkine and Bartlett's test. A data suitability test was performed in order to address the issue of multicollinearity and to guarantee that the variables had adequate internal reliability, as measured by Cronbach's alpha Attakora-Amaniampong et al. [38]; Attakora-Amaniampong et al. [39]. Additionally, the validity of the variables was assessed by tests of convergent and discriminant validity. Furthermore, the researchers conducted Exploratory Factor Analysis (EFA) in order to assess the unidimensionality of the factors and determine their suitability for factor analysis. The analysis method chosen for this study was the Maximum Likelihood approach, which was combined with Principal Axis Factoring and Oblimin Kaiser Normalisation. It was ensured that the lowest eigenvalue was set to one. Factor analysis is considered suitable when the Kaiser-Meyer-Olkin (KMO) statistic exceeds the acceptable threshold of 0.5 and ideally reaches a value of 0.8 or above [40]. Hair et al. [28] proposed that a threshold value for the Kaiser-Meyer-Olkin (KMO) measure should be 0.7 or above. Hair et al. [41] have said that the factor's suitability is substantiated by Bartlett's test, which yielded a significance level of less than 0.0001. The findings of the analysis were reported in terms of means, standard deviations, factor loadings, corrected item-total correlations, and Cronbach's alpha. These measures were utilised to identify the factors that operate as barriers to

the implementation of TQM in the construction industry of Ghana.

4. RESULTS AND DISCUSSION

Table 1 indicates the factors that serve as obstacles to successful implementation of TQM in the construction industry. The data is represented in terms of percentage replies on a scale ranging from 1 (indicating strong disagreement) to 5 (indicating strong agreement). Additionally, the Mean (MS) values provided in the table range between 1.00 and 5.00

All the mean scores (MS) for the identified obstacles to successful implementation of TQM in the construction industry in Ghana are above the midpoint score of 3.00. This suggests that the respondents generally agreed with these factors. It is worth noting that all sixteen ranked factors, which are considered obstacles to TQM implementation, have mean scores ranging from 3.50 to 5.00. This indicates that the respondents perceive these factors to be between the levels of agreement and strong agreement. The attainment of a reasonably high MS indicates that these variables serve as significant obstacles impeding the implementation or adoption of TQM inside the construction sector. Among the sixteen obstacles identified, Lack of understanding of TQM was rank first, followed by Lack of enforcement by the agencies responsible for regulating the application of TQM, Inadequate

Table 1. Obstacles to the implementation of TQM

Obstacles/Factors	Strongly disagree…Strongly agree					MS	SD	Rank
	1	2	3	4	5			
Lack of understanding of TQM	0.00	3.54	12.87	30.60	52.99	4.33	0.83	1
Lack of enforcement by the agencies responsible for regulating the application of TQM	0.00	2.43	18.47	33.96	45.15	4.22	0.83	2
Inadequate TQM system	0.93	4.48	15.49	35.63	43.47	4.16	0.91	3
Lack of enthusiasm for TQM implementation	0.37	4.10	16.23	41.23	38.06	4.13	0.85	4
Lack of a TQM policy	0.56	6.16	20.15	30.04	43.10	4.09	0.96	5
Inadequate management commitment	0.37	6.90	17.72	33.40	41.60	4.09	0.95	5
Resistance to new management techniques	1.87	3.73	18.66	36.19	39.55	4.08	0.95	6
Uncoordinated TQM policy execution within the organisation	0.00	9.33	13.62	38.25	38.81	4.07	0.95	7
Lack of TQM training and education for employees	2.05	2.24	19.59	39.74	36.38	4.06	0.91	8
Complexity of the TQM technique	0.19	3.54	23.13	36.57	36.57	4.06	0.87	8
Lack of TQM experts	0.00	7.46	21.08	32.09	39.37	4.03	0.95	9
Inadequate financial resources in TQM expert management	1.12	8.21	20.52	33.77	36.38	3.96	1.00	10
TQM application is not well understood by construction experts	0.00	5.78	24.81	38.99	30.41	3.94	0.88	11
The belief that TQM will not produce better results	3.92	5.41	23.32	34.70	32.65	3.87	1.06	12
TQM is an expensive method	1.87	8.21	24.81	32.65	32.46	3.86	1.02	13
The TQM method takes a lot of time	0.37	10.07	28.17	33.40	27.99	3.79	0.98	14

TQM system, Lack of enthusiasm for TQM implementation, Lack of a TQM policy, Inadequate management commitment, Resistance to new management techniques, Uncoordinated TQM policy execution within the organisation, Lack of TQM training and education for employees, Complexity of the TQM technique, Lack of TQM experts, Inadequate financial resources in TQM expert management, TQM application is not well understood by construction experts, The belief that TQM will not produce better results, TQM is an expensive method, and The TQM method takes a lot of time was rank last as shown in Table 1.

Additionally, an Exploratory Factor Analysis (EFA) was performed in order to evaluate the unidimensionality and reliability of the factors that serve as obstacles to the effective implementation of TQM within the construction industry of Ghana. The extraction and rotation approach chosen for this study was Principal Axis Factoring with Oblimin rotation, also referred to as PAF Oblimin. Cronbach alpha was used to assess the instrument's reliability in the study. Hair et al. [28], determined that Cronbach alpha coefficients exceeding 0.7 were indicative of excellent reliability. This observation provides additional clarification that a higher alpha coefficient is indicative of greater test reliability. Within the scope of the present study, it was observed that the minimum Cronbach Alpha coefficient attained a value of 0.938, whereas the maximum coefficient reached a value of 0.944. The result of Factor Loading, Corrected Item-Total Correlation and Cronbach's Alpha is presented in Table 2.

The corrected item-total correlation was higher than the recommended threshold of 0.30, implying that the items were appropriate measures of the obstacles to the implementation of TQM. Cronbach's alpha was higher than 0.700 at 0.944 (Table 3), indicating acceptable Internal reliability [29]. The derived Kaiser-Meyer-Olkin (KMO) value of 0.927, along with the Bartlett's test of sphericity result of $p<0.000$ (Table 4), indicates conformity to the recommended KMO cut-off value of 0.70 and Bartlett's test of sphericity threshold of $p<0.05$ as indicated by Hair et al [28].

The factor loadings for all items, as presented in Table 2 were above the threshold of 0.586 [42]. This value surpasses the accepted criterion of 0.40, as proposed by Field [43] and Hair et al. [44]. All the sixteen attributes identified (Lack of understanding of TQM, Lack of enforcement by the agencies responsible for regulating the

Table 2. Factor loading, corrected item-total correlation and cronbach's alpha results

Factors/Attributes	Factor Loading	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Resistance to new management techniques	0.926	0.694	0.940
Lack of understanding of TQM	0.853	0.765	0.939
Lack of TQM training and education for employees	0.851	0.809	0.938
TQM is an expensive method	0.800	0.524	0.944
Lack of enforcement by the agencies responsible for regulating the application of TQM	0.790	0.676	0.941
The TQM method takes a lot of time	0.772	0.577	0.943
TQM application is not well understood by construction experts	0.738	0.752	0.939
Lack of a TQM policy	0.732	0.707	0.940
Inadequate management commitment	0.720	0.693	0.940
Complexity of the TQM technique	0.715	0.763	0.939
Lack of TQM experts	0.662	0.679	0.941
Uncoordinated TQM policy execution within the organisation	0.636	0.685	0.940
Lack of enthusiasm for TQM implementation	0.634	0.640	0.941
Inadequate financial resources in TQM expert management	0.628	0.751	0.939
The belief that TQM will not produce better results	0.596	0.728	0.940
Inadequate TQM system	0.586	0.717	0.940

Table 3. Reliability of barriers to successful implementation of TQM

Construct	Number of Items	Cronbach's alpha value	Cronbach's alpha based on Standardized Items
Barriers to successful implementation of TQM	16	0.944	0.945

Table 4. Sampling adequacy test (KMO and Bartlett's Test)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.927
Bartlett's Test of Sphericity	Approx. Chi-Square	6235.118
	Df	120
	Sig.	0.000

application of TQM, Inadequate TQM system, Lack of enthusiasm for TQM implementation, Lack of a TQM policy, Inadequate management commitment, Resistance to new management techniques, Uncoordinated TQM policy execution within the organisation, Lack of TQM training and education for employees, Complexity of the TQM technique, Lack of TQM experts, Inadequate financial resources in TQM expert management, TQM application is not well understood by construction experts, The belief that TQM will not produce better results, TQM is an expensive method, and The TQM method takes a lot of time) were identified as appropriate measures for the analytical test to be performed. The result of this study has no much difference with other authors results presented in their studies. According to Mosadeghrad [12], significant obstacles to the successful implementation of TQM include the utilisation of inadequate or unsuitable TQM models, the application of ineffective or inappropriate methodologies for implementing TQM, and the presence of an unfavourable environment for TQM implementation. On other hand, Hamidi and Zamanparvar [8], stressed that one of the major problems and obstacles for implementing TQM in both developed and developing nations is lack of top management commitment. The findings of this study also support the arguments made by Newall and Dale [17], who contend that inadequate education and training are a significant barrier to the creation and implementation of quality programmes.

5. CONCLUSION

The literature highlights that the implementation of TQM has been shown to enhance organisational performance in principle. However, it is important to note that the implementation of TQM is not without its challenges and difficulties. The primary objective of this study was to identify the key reasons that hinder the effective implementation of TQM in the construction industry of Ghana. This was achieved by examining the perceptions of participants regarding various variables that are significant to this study. The study's findings are expected to close a gap in the body of knowledge regarding the significant obstacles to TQM implementation in Ghana's construction sector. Conclusively, the main obstacles to TQM implementation as established by the study are: Lack of understanding of TQM, Lack of enforcement by the agencies responsible for regulating the application of TQM, Inadequate TQM system, Lack of enthusiasm for TQM implementation, Lack of a TQM policy, Inadequate management commitment, Resistance to new management techniques, Uncoordinated TQM policy execution within the organisation, Lack of TQM training and education for employees, Complexity of the TQM technique, Lack of TQM experts, Inadequate financial resources in TQM expert management, TQM application is not well understood by construction experts, The belief that TQM will not produce better results, TQM is an expensive method, and The TQM method takes a lot of time. These identified obstacles to TQM implementation can be categorized as follows: strategic, human resources, structural, contextual, and procedural obstacles. Based on the findings, it is possible to draw the conclusion that all of the obstacles that were taken into consideration throughout the research have a significant impact on the implementation of TQM in the Ghanaian construction sector. The authors believe that the adoption of Total Quality Management is a process of transformative change within the organization which requires top management's (leadership) appreciation of the obstacles identified in this study.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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